

## M.Sc. Computer Science Syllabus First Year (2018-23)

### Elective- Programming with DOT NET

Semester II	Subject Code: MSE21805	Lectures: 60
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#### Objectives:

- The syllabus aims in equipping students with,
- To understand the DOTNET framework, C# language features
  - To learn Web development using ASP.NET

#### PART-I :C#

#### Unit 1: DOTNET Framework

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- Introduction to DOTNET
- DOT NET class framework
- Common Language Runtime
  - i. Overview
  - ii. Elements of .NET application
  - iii. Memory Management
  - iv. Garbage Collector : Faster Memory allocation, Optimizations
- Common Language Integration
  - i. Common type system
  - ii. Reflection API
- User and Program Interface

#### Unit 2: .NET Assemblies

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- Components
- NET Assembly features
- Structure of Assemblies
- Calling assemblies, private and shared assemblies

#### BOS Members:

Dr. Reena Bharathi (Subject Expert)

Dr. Mainsha Bharambe (Subject Expert)

Dr. Jyoti Yadav (Subject Expert)

Mr. Vishal Salke (Industry Expert)

Miss Amruta Nambiar (Alumni)

Prof. Ashwini Kulkarni (Chairman)

Prof. Alka Kalhapure (Internal Faculty)

Prof. Shubhangi Jagtap (Internal Faculty)



**Unit 3: Introduction to C#**

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- Language features
  - i. Variables and Expressions, type conversion
  - ii. Flow Control
  - iii. Functions, Delegates
  - iv. Debugging and error handling, exception handling ( System Defined and User Defined)
- Object Oriented Concepts
  - i. Defining classes, class members, Interfaces, properties
  - ii. Access modifiers, Implementation of class, interface and properties
  - iii. Concept of hiding base class methods, Overriding
  - iv. Event Handling
- Collections, Comparisons and Conversions
  - v. Defining and using collections, Indexers, iterators
  - vi. Type comparison, Value Comparison
  - vii. Overloading Conversion operators, as operator
- Generics
  - viii. Using generics
  - ix. Defining Generics, generic Interfaces, Generic methods, Generic Delegate

**Unit 4: Window Programming**

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- Window Controls
  - i. Common Controls
  - ii. Container Controls
  - iii. Menus and Toolbars
  - iv. Printing
  - v. Dialogs
- Deploying Window Application
  - i. Deployment Overview
  - ii. Visual studio setup and Deployment project types
  - iii. Microsoft windows installer architecture
  - iv. Building the project : Installation

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<b>Unit 5: Data Access</b>	<b>6</b>
<ul style="list-style-type: none"> <li>• File System Data</li> <li>• XML</li> <li>• Databases and ADO.NET</li> <li>• Data Binding</li> </ul>	
<b>Unit 6: Web Programming</b>	<b>6</b>
<ul style="list-style-type: none"> <li>• Basic Web programming</li> <li>• Advanced Web programming</li> <li>• Web Services</li> <li>• Deployment Web applications</li> </ul>	
<b>Unit 7: Networking</b>	<b>2</b>
<ul style="list-style-type: none"> <li>• Networking overview</li> <li>• Networking programming options <ul style="list-style-type: none"> <li>i. WebClient</li> <li>ii. WebRequest and WebResponse</li> <li>iii. TcpListener &amp; TcpClient</li> </ul> </li> </ul>	
<b>Unit 8: Introduction to GDI+</b>	<b>2</b>
<ul style="list-style-type: none"> <li>• Overview of Graphical Drawing</li> <li>• Pen Class, Brush Class, Font Class</li> <li>• Using Images</li> <li>• Clipping, Drawing2D, Imaging</li> </ul>	

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*[Handwritten signatures in blue ink: Reena, Mainsha, Jyoti, Vishal, Amruta, Ashwini, Alka, Shubhangi]*





<b>Part II : ASP.NET</b>	
<b>Unit 1: Introduction to ASP.NET</b>	<b>1</b>
<b>Unit 2: Server Controls and Variables, control Structures &amp; Functions</b>	<b>4</b>
<ul style="list-style-type: none"> <li>• Forms, webpages, HTML forms, Webforms</li> <li>• Request &amp; Response in Non-ASP.NET pages</li> <li>• Using ASP.NET Server Controls</li> <li>• Datatypes : Numeric, text, arrays, datacollections</li> <li>• Overview of Control structures</li> <li>• Functions : web controls as parameters</li> </ul>	
<b>Unit 3: Even Driven Programming and PostBack</b>	<b>3</b>
<ul style="list-style-type: none"> <li>• HTML events</li> <li>• ASP.NET page events</li> <li>• ASP.NET Web control events</li> <li>• Event driven programming and postback</li> </ul>	
<b>Unit 4: Reading from Databases</b>	<b>3</b>
<ul style="list-style-type: none"> <li>• Data pages</li> <li>• ADO.NET</li> </ul>	
<b>Unit 5:ASP.NET Server Controls</b>	<b>4</b>
<ul style="list-style-type: none"> <li>• ASP.NET Web Controls</li> <li>• HTML Server Controls</li> <li>• Web Controls</li> <li>• Web API</li> </ul>	
<b>Unit 6: DOTNET assemblies and Custom Controls</b>	<b>2</b>
<ul style="list-style-type: none"> <li>• Introduction to Coolies, Sessions</li> <li>• Session events</li> <li>• State management Recommendations</li> </ul>	

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**Unit 7: Web Services**

2

- HTTP, XML & Web services
- SOAP
- Building ASP.NET web service
- Consuming a web service

**\*Contact hours – 6 hours**

**Reference Books:**

1. *Beginning Visual C#*, Wrox Publication
2. *Professional Visual C#*, Wrox Publication
3. Tom Archer, *Inside C#*, ISBN: 0735612889 Microsoft Press © 2001
4. *Beginning ASP.NET 3.5*, Wrox Publication
5. Jesse Liberty, Dan Maharry, Dan Hurwitz, *Programming ASP.NET 3.5*,
6. DANIEL SOLIS, *Illustrated C# 2010*, Publication APRESS
7. Christian Nagel, Bill Evjen, Jay Glynn, Karli Watson, Morgan Skinner, *Professional C# 4.0 and .NET 4*, WROX
8. Dan Clark, *Beginning C# Object-Oriented Programming*, Apress
9. Peter D., *ADO.NET Examples and Best Practices for C# Programmers*, Blackburn Apress
10. Carsten Thomsen, *Database Programming with C#*, Carsten Thomsen, Apress

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